

2018 STATUS OF WALLEYE IN SOUTHERN GREEN BAY AND THE FOX RIVER

Background

Walleye stocks in southern Green Bay were decimated during the early to mid-1900s by habitat destruction, pollution, interactions with invasive species, and from over-exploitation. Following water quality improvements in the early 1970's, the Wisconsin Department of Natural Resources began to stock fry and fingerling fish to rehabilitate the Walleye population. This stocking program was so successful in southern Green Bay and the lower Fox River that it was discontinued in 1984 and in the Sturgeon Bay area in 2012. Since 1984, surveys have been conducted to assess adult and young of year (YOY) Walleye in the Fox River, Green Bay and other tributaries.

The purpose of this report is to summarize data collected during the 2018 field season on the southern Green Bay/Fox River Walleye stock, and to describe long-term trends in YOY production and angler catch and harvest.

Spring Electrofishing Surveys

Since 2013, Wisconsin DNR has assessed the magnitude of Walleye spawning migrations into the Fox River located in southern Green Bay by using daytime electroshocking. Electrofishing is conducted just below the dam in De Pere to capture Walleye during the estimated peak of the spring spawning run with a goal to tag 500 Walleye and to collect biological information from captured Walleye.

Electroshocking runs were conducted on the Fox River on March 28, April 2 and April 11 to capture Walleye. During this period weather conditions varied greatly with warm weather followed by cold temperatures, heavy snow and high flows. Water temperatures fell from 42 F on March 28 to 39F on April 11. During these sampling events, 581 Walleye were captured with a total shocking effort of 4.2 hours resulting in a CPE of 138.6 Walleye per hour shocked. Captured Walleye ranged in length from 388 mm to 780 mm (15.3" to 30.7") and had an average length of 582 mm (22.9").

The 269 male Walleye that were captured ranged in length from 388 mm to 688 mm (15.3" to 27.1") and had an average length of 481 mm (18.9") (Figure 1). Most of the captured male Walleye were less than 600 mm (24") in length with few fish greater than 600 mm (24"). The 310 female Walleye ranged in length from 454 mm to 780 mm (17.9" to 30.7") and had an average length of 618 mm (24.3"). The distribution of female Walleye length was bimodal with peaks near 530 mm (20.9") and 610 mm (24") (Figure 2). Most of the captured female Walleye were greater than 600 mm (24") in length.

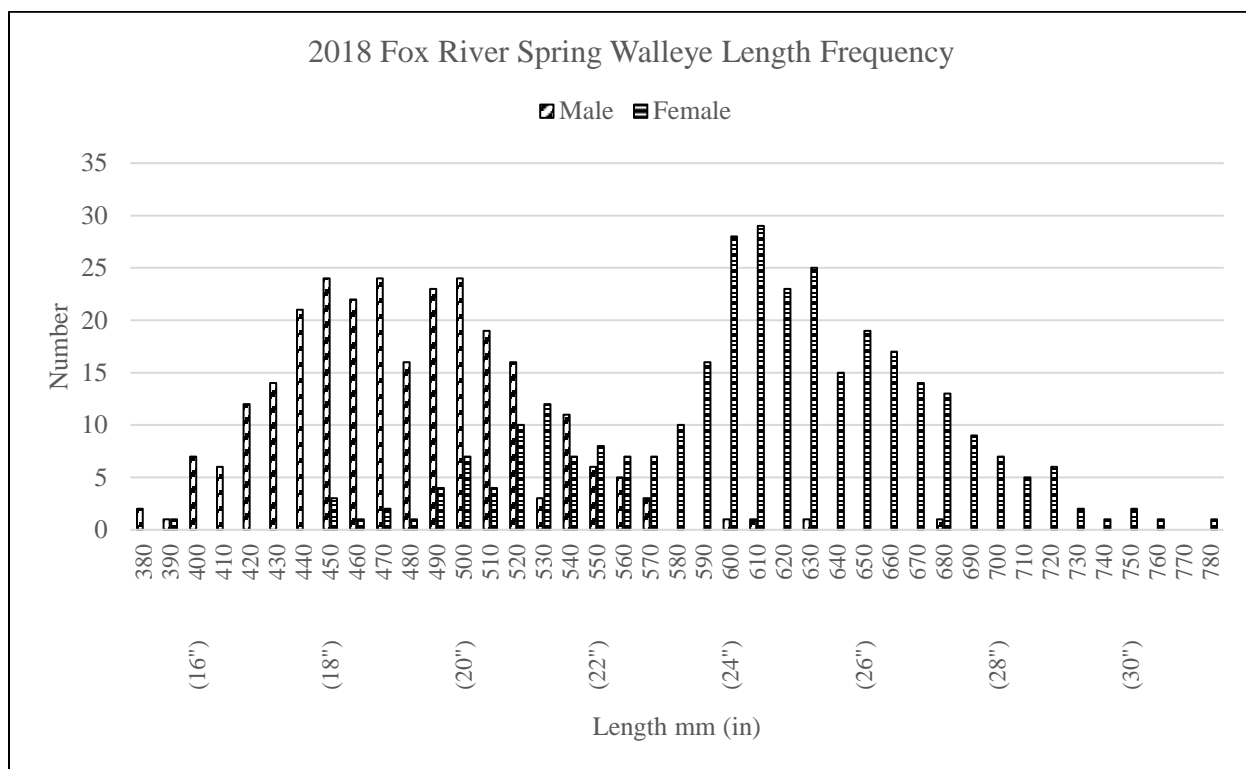


Figure 1. The length distribution of Walleye captured during 2018 spring electroshocking on the Fox River.

A dorsal spine was removed from captured Walleye for age analysis with up to ten spines per centimeter length interval for male and female Walleye collected. In 2018, 574 spines (269 male and 305 female) were analyzed to develop our Year Class (YC) distribution table (Figure 2). YC 2013 (age 5) was the most common YC, with YC 2012 (age 4) and YC 2010 also present in good number. In 2018, 2013 YC Walleye represented 23.3% of the run.

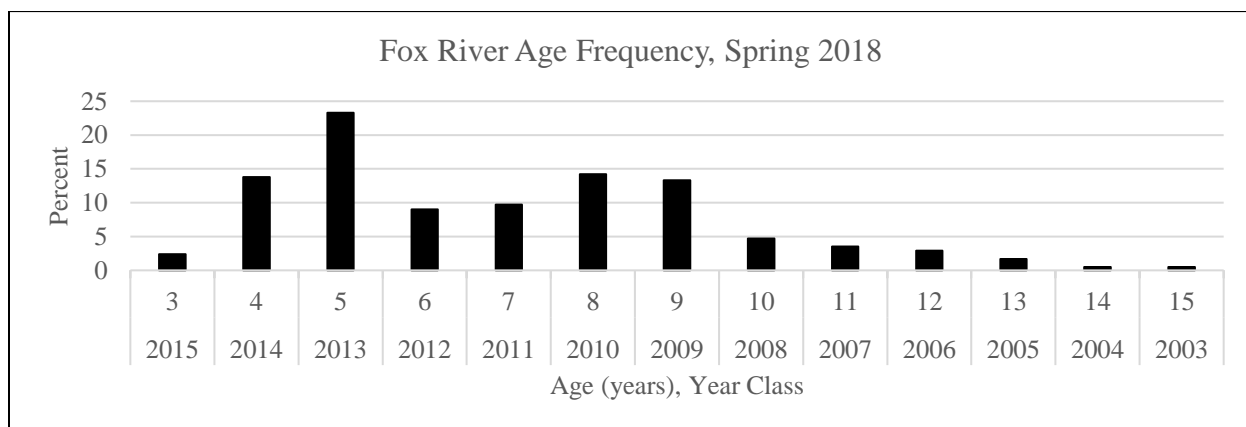


Figure 2. The year class distribution of Walleye captured during the spring spawning run from the Fox River in 2018. Male and female ages are pooled to determine the percentage of the run represented by each year class.

Fall Electrofishing Index Surveys

In 2018, during the nighttime YOY Walleye index electroshocking survey on the Fox River, we captured 785 Walleye that had average length of 243 mm (9.6") and ranged in length from 120 mm to 641 mm (4.7" to 25.2") (Figure 3). 608 (77.5%) of the captured Walleye were classified as YOY Walleye. Other aged Walleye were present, but in much lower abundances with YC 2013 (age 5) and 2014 (age 4) the most common. The length and age frequencies of captured Walleye indicates that the stock's age structure is dominated by young Walleye with few large Walleye captured during fall surveys despite the number of large (old) Walleye captured during spring surveys.

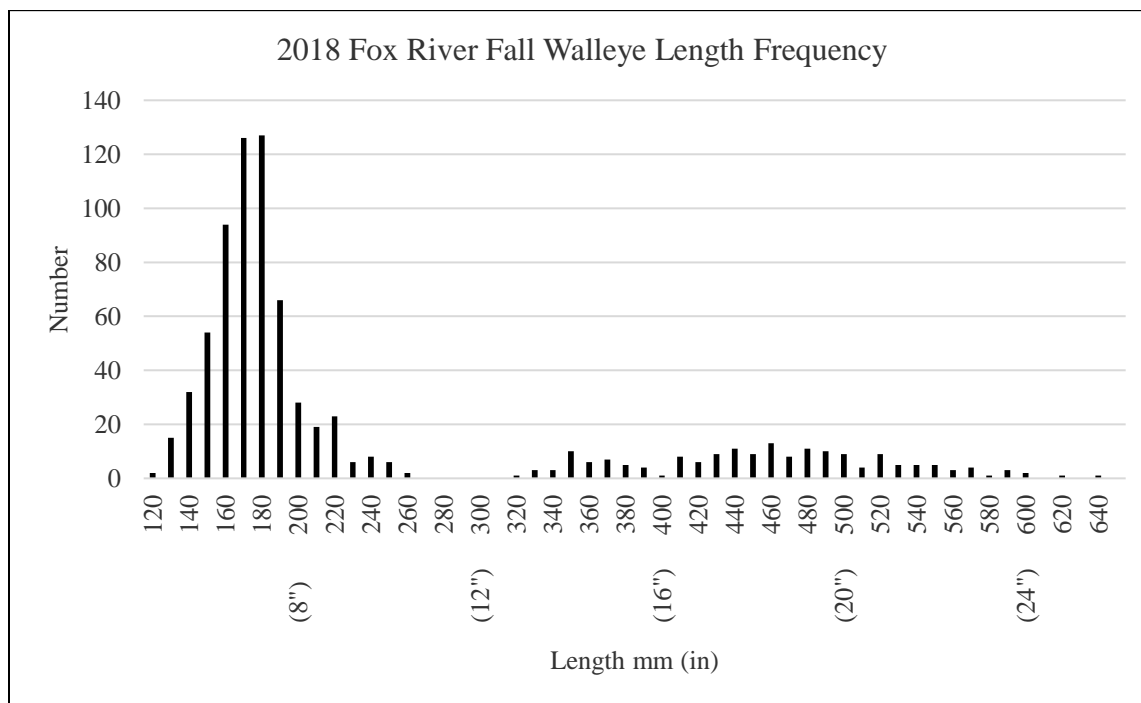


Figure 3. Length-frequency distribution of Walleye sampled while electrofishing the lower Fox River during fall 2018.

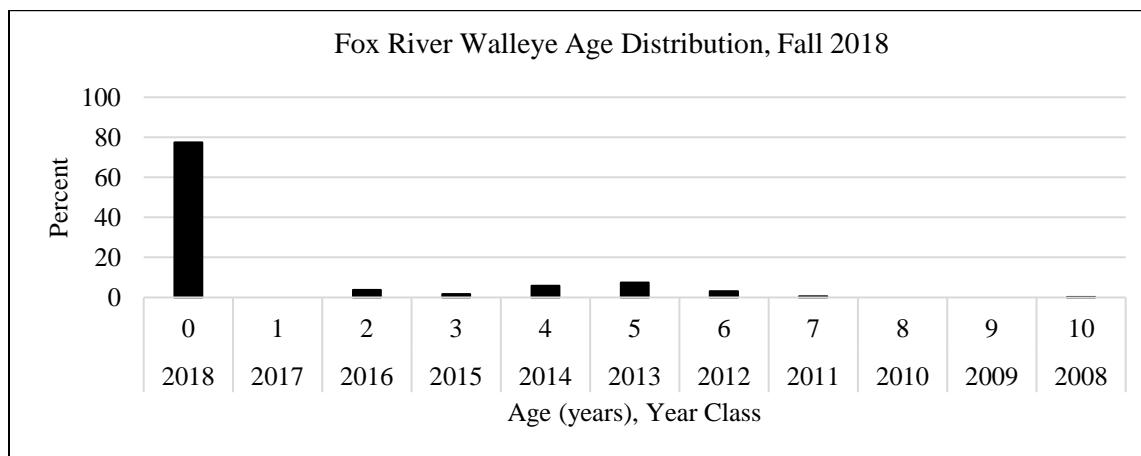


Figure 4. The age distribution of walleye captured from the Fox River during fall 2018 electroshocking surveys.

During YOY Walleye assessments on Green Bay, we captured 377 Walleye that ranged in length from 125 mm to 692 mm (4.9" to 27.2") with an average length of 223 mm (8.8") (Figure 5). Walleye less than 260 mm (10") in length were assigned to the 2018 YC based on the age distribution of Fox River Walleye sampled in 2018. Based on this age assignment, 317 (84.1%) were YOY Walleye. The distribution of age was typical for fall electroshocking with most Walleye small and young in age.

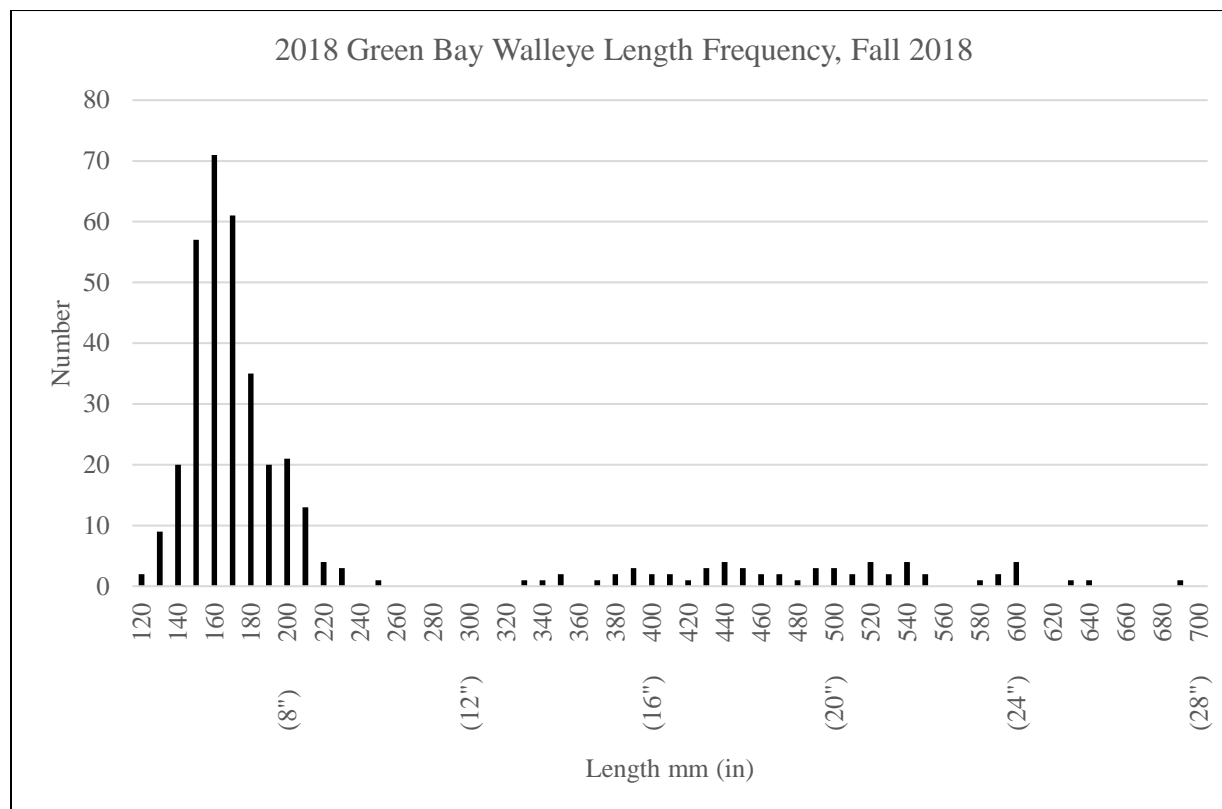


Figure 5. Length-frequency distribution of Walleye sampled while electrofishing lower Green Bay during 2018.

Recruitment of YOY Walleye

Results of our 2018 fall electrofishing index surveys show that the CPUE of young of the year (YOY) caught on the Fox River and southern Green Bay was the highest measured during the period of 1993 through 2018 (Figure 6). Fox River YOY Walleye CPUE was 90.7 per hour shocked, which was the highest on record and far above the 1993-2017 average CPUE of 14.6 YOY per hour. The southern Green Bay catch was 64.7 YOY per hour shocked, also the highest on record and far above the 1993-2017 average of 9.7 per hour. Since 2007, with the exception of 2012, Walleye YOY assessments have found above average YC production in either the Fox River or Green Bay or in both locations. Consecutive poor YC's were last noted at both locations during the falls of 2004 to 2006.

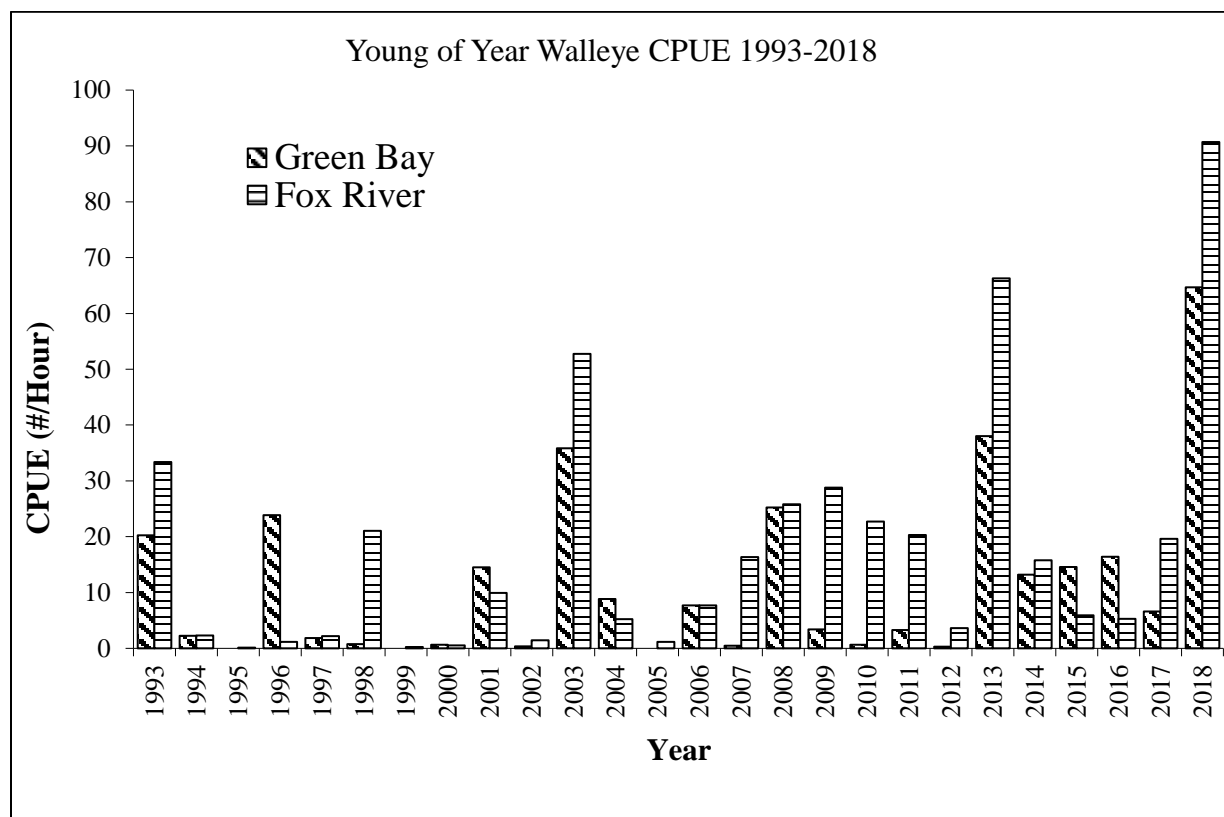


Figure 6. CPUE of young-of-year Walleye in the lower Fox River (DePere Dam to mouth), lower Green Bay (south of a line drawn from Longtail Point to Point Sable), as measured by catch per unit effort (CPUE; number per hour) from data collected in electrofishing index surveys during 1993-2018.

Catch and Harvest

The total catch of Walleye from Wisconsin waters of Green Bay was estimated by DNR creel survey at 265,293 fish during the 2018 open water fishing season (March–October 31) (Figure 7). This was a 27.1% increase from the estimated 208,729 Walleye that were caught during the 2017 open water fishing season. The 2018 Walleye catch was the highest on record since 1986 and was far above the 1986-2017 average catch of 119,000 Walleye.

The total open water fishing season harvest of Walleye from Wisconsin waters of Green Bay increased by 36.9% from 89,137 Walleye harvested in 2017 to 121,996 harvested in 2018 (Figure 9). The 2018 harvest of Walleye was more than three times the 1986-2017 average harvest of 39,100 and was the highest estimated harvest on record.

Although there have been yearly fluctuations in catch and harvest, the general trend for catch and harvest has been steadily increasing since the early 2000's. Since 2012, the estimated Walleye catch has been above 150,000 fish each year. It is likely that the increases in catch are directly related to average to above average YOY production since 2007. Likewise, the estimated harvest has been above 75,000 Walleye since 2012 due to strong Walleye production. The large increases in catch and harvest noted in 2018 were likely due to the 2013 year class fully entering the fishery.

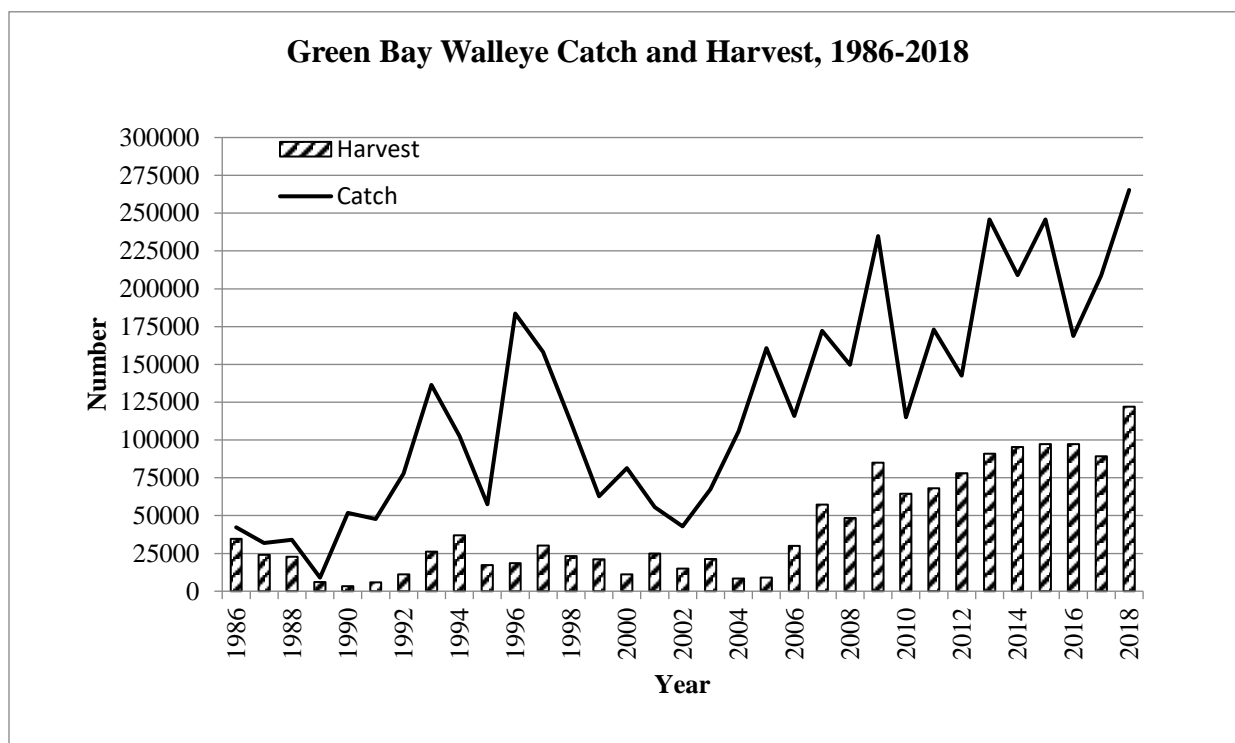


Figure 7. Estimated total open water season (March-October) Walleye catch and harvest from Wisconsin waters of Green Bay and the lower Fox River during 1986 through 2018.

The Future of the Sport Fishery

The future of the southern Green Bay/lower Fox River Walleye stock and sport fishery appears to be very promising. Substantial Walleye year classes have been measured the past ten of the past twelve falls during electroshocking with the 2018 cohort being the strongest year class measured since the onset of fall index shocking. Year classes since 2013 have been rated as average or slightly above average with 2013 and 2018 the largest measured. The 2013 YC has fully entered the fishery and as the 2015 through 2018 year classes fully recruit to the fishery, yearly catch and harvest are likely to increase because these fish will obtain a size desired by anglers. Additionally, as contaminant levels continue to decrease from the Fox River PCB clean-up, Walleye harvest will also likely continue to increase.

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